

Docket No.: P-0306

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCE**

In re Application of

Confirmation No.: 5310

Woo Sik KIM et al.

Group Art Unit: 2633

Serial No.: 10/023,745

Examiner: Christina Y. LEUNG

Filed: December 21, 2001

Customer No.: 34610

For: SIGNAL TRANSMISSION APPARATUS AND METHOD FOR OPTICAL
BASE STATION

REPLY BRIEF

U.S. Patent and Trademark Office
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Sir:

In response to the Examiner's Answer dated August 10, 2006, appellants are providing the following Reply Brief. This Reply Brief is filed in accordance with 37 C.F.R. §41.41.

Appellants respectfully maintain all previous arguments. Claims 1-19, 21, 26, 28-38 and 40-42 are pending in this application and are on appeal.

The Appeal Brief incorrectly states that claims 1-2, 6-8 and 10-42 stand rejected over Russell since claims 20, 22-25, 27 and 39 are no longer pending. Rather, claims 1-2, 6-8, 10-19, 21, 26, 28-38 and 40-42 stand rejected under 35 U.S.C. §102(a) over U.S. Patent 5,728,879 to Russell et al. (hereafter "Russell").

Additionally, the Second Amendment After Final Rejection filed on April 21, 2006 has been entered. Thus, the claims on appeal are provided in Claims Appendix A attached to the Appeal Brief.

The Examiner's Answer (on pages 15-22) provides further arguments to the Appeal Brief. The following address the further responses in the Examiner's Answer. Appellants other arguments are provided in the Appeal Brief.

Independent claim 1 specifically recites a base station configured to output first digital in phase and quadrature phase (I/Q) signals. Independent claim 1 also recites an optical connecting unit configured to convert the first digital I/Q signals into optical signals. Appellants have previously stated that Russell does not teach or suggest a base station configured to output first digital in phase and quadrature phase (I/Q) signals, as recited in independent claim 1. Russell's Figure 17 shows a base station 330 that is coupled to head end unit 332 by fibers 331A and 331B. Russell clearly describes that the base station 330 outputs RF signals. See column 15, lines 31-48, and Figure 3.

The Examiner's Answer states (in the paragraph bridging pages 15-16) that Russell discloses a subsystem to output first digital I/Q signals and that the subsystem may include three parts, namely (1) the element labeled as the base station 330; (2) the head end unit 332; and (3) the QAM modulator 460 within AM modulator/demodulator 338 (Figure 28). More specifically, the Examiner's Answer relies on statements made in Russell's col. 15, lines 35-42 to assert that

the base station may be provided within a location different than that shown in Figure 17. The following is Russell's col. 15, lines 33-42.

The base station unit 330 may be positioned, as in the embodiment of FIG. 2, in a convenient location, remote from the head end. Alternatively, base station 330 could be located at the head end, with the elimination of the fiber link and other unnecessary components, such that the RF signal output of the transmitters may be filtered and applied directly to the AM modulator/demodulators 338 filtered and in return the output of the AM modulators/demodulators 338 filtered and applied directly to the receivers 28.

Appellants believe that the Examiner's Answer misinterprets the cited section of Russell. That is, Russell clearly describes that the base station 330 outputs RF signals. See at least col. 15, line 38. More specifically, the description within col. 15, lines 33-42 states that the base station may be positioned at the head end such that the RF signal output from the transmitters may be applied to the AM modular/demodulator 338. While this may suggest that the base station 330 may be provided at a location near the head end unit 32, the base station 330 is still described as outputting RF signals. Again, independent claim 1 recites "a base station configured to output first digital in phase and quadrative phase (I/Q) signals." At no point does Russell describe that the base station 330 outputs first digital in phase and quadrature phase (I/Q) signals as recited in independent claim 1. In the absense of an explict disclosure of the base station 330 outputting first digital in phase and quadrature phase (I/Q) signals, Russell clearly does not anticipate the features of independent claim 1.

Furthermore, there is no suggestion for Russell's base station 330 to output the digital I/Q signals as Russell clearly describes RF signals being output from the base station 330.

Appellants believe that col. 15, lines 33-42 supports that RF signals are output from the base station 330 regardless of the location of the base station 330. Additionally, as stated in the Appeal Brief (on page 11, lines 2-6), there is no suggestion to interpret Russell's base station 330 so as to include the head end unit 332 and the AM modulator/demodulator 338. These features are not part of a base station as would be understood to one skilled in the art.

The Examiner's Answer (on page 3, last paragraph) states that Russell's base station 330 may be co-located with the head end unit 332 without being separated by lines 331A and 331B. However, there is no discussion that the base station 330 outputs digital I/Q signals regardless of the location of the base station 330.

Additionally, the Examiner's Answer (on page 16, second paragraph) appears to assert that the base station may encompass a box drawn around one of the three parts named in the Examiner's Answer in order to define a base station that meets the limitations of appellant's claim 1. Appellants respectfully submit that Russell clearly describes a base station 330. It would be improper to redefine this terminology (as is used in Russell, the present application and is understood to one skilled in the art). Further, it would be improper to merely draw a box around parts within Russell's Figure 17 so as to include other operations of a base station since Russell has already defined a base station.

Still further, independent claim 1 recites not only a base station but also an optical connecting unit configured to convert the first digital I/Q signals into optical signals. Clearly the drawing of boxes around parts within Russell's Figure 17 would be improper since it would be

redefining an explicit term used by Russell (as well as appellants). The drawing of such a box would clearly alter any alleged optical connecting unit especially with respect to dependent claims (such as dependent claims 7-10 that relate to specific features of the optical connecting unit). In other words, the drawing of an imaginary box, as discussed in the Examiner's Answer, would clearly alter the interpretation of a base station and an optical connecting unit as recited in independent claim 1 (as well as dependent claims 7-10). Therefore, appellants respectfully submit that the Examiner's Answer's suggestion to merely draw a box around parts in order to redefine a base station would be improper. Russell does not teach or suggest all of the features of independent claim 1 as well as its corresponding dependent claims. For at least these reasons, appellants respectfully submit that independent claim 1 defines patentable subject matter.

Independent claim 11 recites converting first digital I/Q signals outputted from a base station into optical signals. For at least similar reasons as set forth above, Russell does not teach or suggest these features as Russell does not teach converting first digital I/Q signals outputted from a base station. Accordingly, independent claim 11 defines patentable subject matter.

Independent claim 18 converting the digital optical signals to second digital electronic signals in the optical coupling unit, the second digital electronic signals including in phase and quadrature phase (I/Q) signals. Independent claim 18 also recites providing the second digital electronic signals from the optical coupling unit to a base station. Russell does not teach at least these features of independent claim 18. Russell does not provide digital electronic signals from an optical coupling unit to a base station. For at least similar reasons as set forth above, Russell

does not teach or suggest all the features of independent claim 18. Thus, independent claim 18 defines patentable subject matter.

Still further, independent claim 26 recites receiving digital I/Q signals from a base station and converting the digital I/Q signals to optical signals in an optical connecting unit. For at least similar reasons as set forth above, Russell does not teach or suggest the features relating to receiving digital I/Q signals from a base station. Thus, independent claim 26 defines patentable subject matter.

The Examiner's Answer (on pages 16-17) asserts that Russell's optical node 342 performs all the recited functions of the claimed optical base station and/or remote base station. Appellants respectfully disagree as the optical node 342 is not an optical base station and/or remote base station as would be known to one skilled in the art. Thus, the optical node 342 does not correspond to the specific features discussed in the Appeal Brief.

The Examiner's Answer discusses dependent claim 7 in the paragraph bridging pages 18-19. However, appellants believe that the Examiner's Answer does not address all the features recited in dependent claim 7. That is, dependent claim 7 recites that the optical connecting unit includes a multiplexer/demultiplexer, an optical transceiver and a clock unit. The multiplexer/demultiplexer configured to multiplex the first digital I/Q signals. The optical transceiver configured to convert output signals of the multiplexer/demultiplexer into the optical signals and transmit the optical signals through the optical cable to the optical base station. The clock unit configured to provide a synchronous signal to the

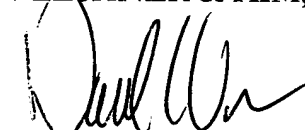
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multiplexer/demultiplexer unit. The Examiner's Answer has not addressed all of the issues recited in dependent claim 7 (and as previously set forth on page 16 of the Appeal Brief). Appellants respectfully submit that applied references do not teach or suggest at least the features of dependent claim 7. Thus, dependent claim 7 defines patentable subject matter at least for this additional reason.

For at least the additional reasons as set forth above, and for at least the reasons set forth in the Appeal Brief (as well as the previous responses), appellant maintains that each of claims 1-19, 21, 26, 28-38 and 40-42 define patentable subject matter. Appellants respectfully request that the rejections of the claims be withdrawn.

Respectfully submitted,
FLESHNER & KIM, LLP



David C. Oren
Registration No. 38,694

P. O. Box 221200
Chantilly, Virginia 20153-1200
703 766-3701 DCO/jlg/kam

Date: October 10, 2006

Please direct all correspondence to Customer Number 34610

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